

CLAIMS

1. ⁽¹⁾ A display panel, decorative panel, instrument panel or appliqué for a vehicle such as an automotive vehicle, comprising a sheet form member having at least one portion integrally formed thereon, the at least one portion having a height of at least 4 mm from a surface of the sheet form member. ⁽²⁾
2. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in claim 1, wherein there are provided at least two portions, each of the at least two portions projecting from a substantially planar first, front or obverse surface of the sheet form member. ⁽³⁾
3. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in either of claims 1 or 2, wherein the/each portion circumscribes a respective area of said planar obverse surface.
4. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein there are provided two portions, each having a height of at least 4 mm from the substantially planar obverse surface of the sheet form member, the two portions being located side by side.
5. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein an ink coating is applied to a surface, such as an obverse surface, thereof, a pigment of an ink of said ink coating being dissolved in a high temperature resin base.

6. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the height of at least one of the at least one portions is between 4 mm and 9 mm.

7. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the height of at least one of the at least one portions is between 4 mm and 7.5 mm.

8. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the height of at least one of the at least one portions is around 6.5 mm.

9. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the/each at least one portion is upstanding from an obverse surface of the sheet form member, such that the/each at least one portion is convex when viewed from the obverse surface of the sheet form member, and is concave when viewed from a second, rear or reverse surface of the sheet form member.

10. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in claim 9, wherein the/each at least one portion comprises a closed shape and the/each closed shape is optionally selected from one of: substantially circular, oval, elliptical or the like or a segmented circle, oval or ellipse.

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11. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in claim 9 when dependent on claim 2, wherein a first portion defines a boundary of a speedometer gauge and a second portion defines a boundary of an engine speed or rev counter or clock, first and second areas within the first and second portions optionally being provided with dial chaplets.
12. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein at least one of said at least one portions comprises a first wall, a second wall, a top part and an open base part.
13. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in claim 12, wherein the base part of the at least one of said at least one portions has a width from an outer-most side of the second wall to an inner-most side of the first wall in the region of 5 mm to 9 mm.
14. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in either of claims 12 or 13, wherein the first wall is convex in shape when viewed from a front of the sheet form member.
15. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any of claims 12 to 14, wherein the first wall of the at least one of said at least one portions comprises part of a circle having a radius of between about 10 mm and 20 mm.

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16. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any of claims 12 to 15, wherein the second wall of the at least one of said at least one portions is substantially vertical.

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17. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any of claims 12 to 15, wherein the second wall is inclined at a shallow angle to the top part of the at least one of said at least one portions.

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18. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any of claims 12 to 17, wherein the top part is angled, the first wall being higher than the second wall and the top part comprising part of a circle having a radius of about 0.5 mm.

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19. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is provided with a pressure sensitive adhesive coated on a second or reverse surface.

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20. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein a spacing between outer-most side walls of adjacent portions is about 45 mm to 50 mm.

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21. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any of claims 2 to 21, wherein a planar portion of the sheet form member has a thickness of between 0.25 mm and 0.5 mm.

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22. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is made substantially from a plastics material such as polycarbonate.

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23. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is made from a blend of polycarbonate and poly-butylene-terraphthalate (PBT) or from ABS.

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24. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is printed with a substantially single colour of ink such as black.

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25. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein at least one of the at least one portions is provided with an ink coating coloured differently from a remainder of the sheet form member, such as metallic, silver or chrome coloured.

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26. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is provided with an aluminium resin coating optionally on an inner surface thereof.

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27. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is provided with a printed design.

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28. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in claim 27, wherein the printed design is created by printing on first and/or second surfaces of the sheet form member.

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29. A display panel, decorative panel, instrument panel or appliqué for a vehicle as claimed in any preceding claim, wherein the sheet form member is a laminate comprising two or more layers laminated together.

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30. A component for a vehicle, such as an automotive vehicle, comprising a vehicle display panel, decorative panel, instrument panel or appliqué according to any of claims 1 to 29.

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31. A component as claimed in claim 31, wherein the component comprises an instrument, gauge or control assembly or cluster for a vehicle, such as an automotive vehicle.

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32. A component as claimed in either of claims 30 or 31, wherein the component further comprises a rigid backing part having the sheet form member mounted thereto.

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33. A component as claimed in claim 32, wherein the sheet form member is moulded to the backing part.

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34. A component as claimed in claim 32, wherein the sheet form member is glued, clipped or otherwise fixed to the backing part.

35. A component as claimed in any of claims 32 to 34, wherein the backing part is made from a plastics material, such as polycarbonate or ABS.

5 36. A vehicle, such as an automotive vehicle, including vehicle display panel, decorative panel, instrument panel or appliqué according to any of claims 1 to 29.

10 37. A method of forming a sheet form member according to any of claims 1 to 29, the method comprising the steps of:
providing a substantially planar sheet; and
forming the at least one portion, and optionally at least two portions, on said substantially planar sheet.

15 38. A method as claimed in claim 37, wherein the portions are formed by a forming process comprising pressure forming.

20 39. A method as claimed in claim 37, wherein the portions are formed by a forming process comprising match metal forming.

25 40. A method as claimed in claim 37, wherein the portions are formed by a forming process comprising cold forming.

30 41. A method as claimed in any of claim 38 to 40, wherein the substantially planar sheet is made substantially from a plastics material, such as polycarbonate or a mixture or blend thereof.

42. A method as claimed in any of claims 38 to 41, wherein the substantially planar sheet comprises a layer of a laminate.

5 43. A method as claimed in any of claims 38 to 42, wherein the substantially planar sheet is printed on first and/or second sides thereof.

10 44. A method as claimed in any of claims 38 to 43, wherein the method includes the step of applying to at least one area of a second surface of the substantially planar sheet an ink, such as a metal, chrome or silver coloured ink, such as an aluminium based ink resin, the at least one area then being formed into one of the at least
15 one portions.

45. A sheet form member having an ink coating applied to at least a portion of a surface, such as an obverse surface thereof, a pigment of an ink of said ink coating being
20 dissolved in a high temperature resin base.

46. A sheet form member as claimed in claims 45 or a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in claim 5, wherein the high
25 temperature resin base has a softening temperature of above 160°C and typically about 205°C.

47. A sheet form member as claimed in either of claim 44 or 45 or a vehicle display panel, decorative panel,
30 instrument panel or appliqué as claimed in claim 5, wherein the resin base for the coating is a dissolved plastics material or acrylic cellulose acetate butyrate.

48... A sheet form member as claimed in claims 47, wherein the plastics material is a polycarbonate material.

5 49. A sheet form member as claimed in claims 47, wherein the plastic material is a copolycarbonate which is a combination of bisphenol A (4,4'-isopropylidenediphenol) and bisphenol TMC (trimethylenecyclohexane bisphenol).

10 50. A sheet form member as claimed in any of claims 47 to 49, wherein the plastics material is dissolved in a non-halogenated solvent such as toluene, tetrahydrofuran, ethyl acetate or butanone.

15 51. A sheet form member as claimed in any of claims 45 to 50 or a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in claim 5, wherein the resin based ink contains a metal, chrome and/or aluminium pigment.

20 52. A sheet form member as claimed in claims 51, wherein the pigment comprises particles or flakes having an average size in the range 5 microns to 55 microns in diameter or length.

25 53. A sheet form member as claimed in any of claims 45 to 52 or a vehicle display panel, decorative panel, instrument panel or appliqués as claimed in claim 5, wherein the ink coating forms a closed shape, the closed shape optionally being annular, oval or elliptical.

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54. A sheet form member as claimed in any of claims 45 to 53 or a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in claim 5, wherein the closed shape ink coating has a width of between about 4 mm to 8 mm
5 between an inside and outside of said shape.

55. A sheet form member as claimed in any of claims 45 to 54 or a vehicle display panel, decorative panel, or appliqué as claimed in claim 5, wherein the sheet form
10 member has a thickness of between 0.25 mm and 0.5 mm.

56. A sheet form member as claimed in any of claims 45 to 55 or a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in claim 5, wherein the sheet
15 form member is made from substantially from polycarbonate.

57. A sheet form member as claimed in any of claims 45 to 55 or a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in claim 5, wherein the sheet
20 form member is made from a blend of polycarbonate and polybutylene-terraphthalate (PBT).

58. A sheet form member as claimed in any of claims 45 to 57 or a vehicle display panel, decorative panel, instrument
25 panel or appliqué as claimed in claim 5, wherein the sheet form member is provided with a printed design.

59. A sheet form member as claimed in claims 58, wherein the printed design includes first and second surface
30 printing.

60. A sheet form member as claimed in any of claims 45 to 59 or a vehicle display panel, decorative panel, instrument

panel or appliqué as claimed in claim 5, wherein the sheet form member is provided with at least two portions integrally formed thereon, at least one of said portions having a raised height of at least 4 mm from the obverse surface of said sheet form member.

61. A sheet form member as claimed in claim 60, wherein the ink coating is substantially coincident with said portion.

62. A vehicle such as an automotive vehicle display panel, decorative panel, instrument panel or appliqué comprising a sheet form member having an ink coating applied to a surface, such as an obverse surface thereof, a pigment of the ink of said ink coating being dissolved in an acrylic cellulose acetate butyrate resin base.

63. A vehicle display panel, decorative panel, instrument panel or appliqué as claimed in claim 62, wherein the pigment comprises particles or flakes having an average size in the range 5 microns to 55 microns in diameter or length.

64. A component for a vehicle, such as an automotive vehicle, including a sheet form member as claimed in any of claims 45 to 61 or a vehicle display panel decorative panel or appliqué as claimed in either of claims 62 or 63.

65. A component as claimed in claim 64, wherein the component further comprises a substantially rigid backing part having the sheet form member moulded thereto.

66. A component as claimed in claim 64, wherein the component further comprises a substantially rigid backing

part, the sheet form member being glued, clipped or otherwise adhered or fixed to the rigid backing part.

5 67. A component as claimed in either of claims 65 or 66, wherein the backing part is made from a plastics material, such as polycarbonate or ABS.

10 68. A vehicle, such as an automotive vehicle including a sheet form member as claimed in any of claims 45 to 61, a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in either of claims 62 or 63.

15 69. A method of providing a sheet form member as claimed in any of claims 45 to 61, a vehicle display panel, decorative panel, instrument panel or appliqué as claimed in either of claims 62 or 63, the method comprising the steps of:

providing a substantially planar sheet; and
applying an ink coating thereto.

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70. A method as claimed in claim 69, wherein the ink coating is applied by screen printing or pad printing.

25 71. A method as claimed in either of claims 69 or 70, wherein the sheet comprises a substantially plastics material, such as polycarbonate or a blend thereof.

30 72. A method as claimed in any of claims 69 to 71, wherein the planar sheet is printed on first and/or second sides of said sheet.

73. A method as claimed in any of claims 69 to 72, wherein the method includes the step of producing a laminated sheet

form member by laminating a further planar sheet form member to a side, such as a rear or reverse side, of said sheet form member.

5 74. A method as claimed in any of claims 69 to 73, wherein the method further includes the step of forming at least one portion and preferably two portions integrally on the sheet form member, at least one portion of said portions having a raised height of at least 4 mm from an obverse surface of
10 said sheet form member.

75. A method as claimed in claim 74, wherein the portion or at least two portions are substantially coincident with said ink coating(s).

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76. A method as claimed in any of claims 74 or 75, wherein the portion or at least two portions are formed by a forming process selected from match metal forming, high pressure forming or cold forming.

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77. A sheet form member having at least two portions integrally formed thereon as hereinbefore described with reference to the accompanying drawings.

25 78. A method of manufacturing a sheet form member having at least two portions integrally formed thereon as hereinbefore described with reference to the accompanying drawings.

30 79. A sheet form member having an ink coating applied to a surface thereof as hereinbefore described with reference to the accompanying drawings.

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80. A method of manufacturing a sheet form member having an ink coating applied to a surface thereof as hereinbefore described with reference to the accompanying drawings.

5 81. A sheet form member or appliqué having at least one portion integrally formed thereon, said at least one portion having a height of at least 4 mm from a surface of the sheet form member.

10 82. A vehicle such as an automotive vehicle display panel, decorative panel, instrument panel, control panel or appliqué, comprising a sheet form member having at least two portions integrally formed thereon, at least one of the portions having a height of at least 4mm from a surface of
15 the sheet form member.

83. A sheet form member or appliqué having an ink coating applied to at least one portion of a surface, such as an obverse surface, thereof, a pigment of an ink of said ink
20 coating being dissolved in a high temperature resin base.

84. A sheet form member or appliqué having an ink coating applied to at least a portion of a surface such as an obverse surface, thereof, a pigment of an ink of said ink
25 coating being dissolved in an acrylic cellulose acetate butyrate resin base.